

**REMARKS**

Claims 1-21 were pending in this application.

Claims 1-21 have been rejected.

No claims have been amended.

Claims 1-21 remain pending in this case.

Reconsideration and full allowance of Claims 1-21 are respectfully requested.

**I. REJECTION UNDER 35 U.S.C. § 103**

The Office Action rejects Claims 1-7 and 15-21 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,396,888 to Notani et al. (“*Notani*”). The Office Action rejects Claims 8-14 under 35 U.S.C. § 103(a) as being unpatentable over *Notani* in view of U.S. Patent No. 5,319,679 to Bagby (“*Bagby*”). These rejections are respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142; *In re Fritch*, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed.

Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142.

The Office Action asserts that an OR gate (element OGN in Figure 7) of *Notani* anticipates a "multiplier" that is capable of receiving and multiplying two signals to "thereby produce an output product signal proportional to a phase shift between" the two signals as recited in Claims 1, 8, and 15. (*Office Action, Page 2, Last paragraph*). The Office Action also asserts that the OR gate inherently produces a "signal proportional to a phase shift" between two inputs. (*Office Action, Page 6, Second paragraph*). To support this assertion of inherency, the Office Action cites U.S. Patent No. 6,295,328 to Kim et al. ("*Kim*").

To establish inherency, the burden is on the Patent Office to present evidence clearly showing that “the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” (*MPEP* § 2112). However, the fact that a “certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.” (*MPEP* § 2112). The Patent Office must “provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows” from the teachings of cited reference. (*MPEP* § 2112).

In order to establish that the OR gate of *Notani* anticipates the multiplier of Claims 1, 8, and 15, the burden is on the Patent Office to show that the OR gate of *Notani* must produce a “signal proportional to a phase shift” between two inputs. The Office Action fails to make that showing.

Take the cited portion of *Lee* as an example. The cited portion of *Lee* refers to an OR gate receiving two input signals, each of which represents a “25% duty cycle signal.” (*Col. 4, Lines 28-33*). A “25% duty cycle” indicates that the signal has a high voltage one-fourth of the time and a low voltage three-fourths of the time. If the two input signals are completely in-phase (perfectly overlap each other), the OR gate would produce an output signal that has a high voltage one-fourth of the time and a low voltage three-fourths of the time. This means that the output voltage produced by the OR gate would still vary between high and low voltages even when the input signals were completely aligned.

Similarly, if the input signals were out-of-phase by 90°, 180°, or 270°, the OR gate of *Lee*

would produce an output signal that has a high voltage one-half of the time and a low voltage one-half of the time. This is because each of the input signals would have a high input voltage at a different time than the other input signal, and the OR gate produces a high output voltage when either of the input signals is high.

As shown in these examples, the output voltage produced by the OR gate of *Lee* is not “proportional to a phase shift” between two inputs. The OR gate produces an output voltage even when there is no phase shift, and the output voltage does not change even when the phase shift changes from 90° to 180° to 270°.

Based on this, the Office Action fails to establish that the OR gate of *Notani* “must” operate as a multiplier capable of producing a signal “proportional to a phase shift” between two signals as recited in Claims 1, 8, and 15. Because the Office Action fails to establish that the OR gate of *Notani* “must” operate as a multiplier as recited in Claims 1, 8, and 15, the Office Action fails to establish that the elements of Claims 1, 8, and 15 are inherently disclosed in *Notani*.

*Bagby* is cited by the Office Action as allegedly disclosing demodulation circuitry. *Bagby* is not relied upon as disclosing, teaching, or suggesting any other elements of Claims 1, 8, and 15.

For these reasons, the Office Action has not established a *prima facie* case of obviousness against Claims 1, 8, and 15 (and their dependent claims). Accordingly, the Applicants respectfully request withdrawal of the § 103 rejection and full allowance of Claims 1-21.

**II. CONCLUSION**

For the reasons given above, the Applicants respectfully request reconsideration and full allowance of all pending claims and that this application be passed to issue.

SUMMARY


If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Applicants respectfully invite the Examiner to contact the undersigned at the telephone number indicated below or at *wmunck@davismunck.com*.

The Commissioner is hereby authorized to charge any fees connected with this communication (including any extension of time fees) or credit any overpayment to Davis Munck Deposit Account No. 50-0208.

Respectfully submitted,

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